

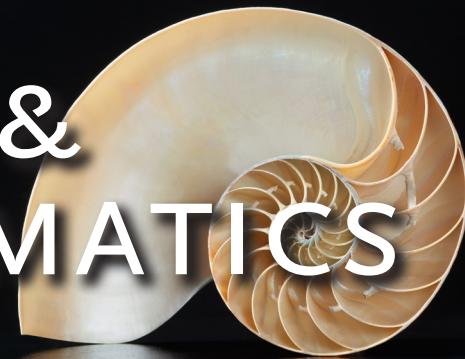


UNIVERSITY OF
SOUTH CAROLINA
BEAUFORT

USCB SCHOOL OF

SCIENCE & MATHEMATICS

NEWSLETTER



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FALL 2018

Highlights in recent research



Dr. Kim Ritchie exploring the Colombian Reef in Cartagena Bay, Colombia. Photo credit: Alaina Weinheimer, Max Planck Institute for Marine Microbiology in Bremen.

In late July, **Dr. Kim Ritchie** and a colleague, Dr. Monica Medina of Penn State, traveled to Colombia to access the condition and threats to a newly discovered coral reef at the mouth of Cartagena Bay. For over 500 years, a canal has dumped wastewater and sediments into the bay. When scientists decided to survey the damage caused over this time, they were surprised to find a thriving coral ecosystem. They have since tallied 30 coral species in the 1-square-kilometer reef, which has 80% coral cover. This is among the highest diversities in all of Colombia. Unfortunately, new economic development now threatens this spectacular reef with the impending end of the long guerilla war with the Revolutionary Armed Forces of Colombia (or FARC). With peace will come a push for long-delayed increases in shipping and trade practices, and there is a plan in place to dredge the bay directly through the heart of the newly discovered coral reef.

New programs at USCB

New honors program starting this fall



L to R: Dean Bob LaFavi (Beaufort Campus), Mr. Mike McFee (Mayor ProTem of Beaufort and USCB alumnus), USCB Chancellor Al Panu, Mr. Andy Kinghorn (President, Beaufort College Trustees), and Mrs. Blakely Williams (Beaufort Regional Chamber of Commerce). Photo credit: Jennifer Sanborn

The fall semester will welcome our inaugural freshman class of the Biology Honors program to the renovated Beaufort Campus! The new dorms, located on Boundary Street in Beaufort,



will serve as residences for the Biology and Nursing students, as well as our Arts students. We are looking forward to having a new presence at the Beaufort campus, and there is a buzz in the community about these new programs. Ribbon cutting on the brand new dorms in Beaufort for the Honors and Visual Art & Design Campus occurred on August 16, just days before the first students would move into the new dorms.



First year dinner for Honors' and Arts' students hosted by Blackstones Café (Scott Street in Beaufort). Students in front and the attending faculty in the back. It was a great time to meet and get to know these wonderful students. We are all looking forward to a great year, and this was an auspicious start! Photo credit: Lou Gaudio



Just this month, we completed renovations on a new research laboratory in the second floor of the Marine Science Building in Beaufort. This is the first dedicated laboratory research space on the Beaufort Campus that will serve as a home to **Dr. Kim Ritchie's** lab group and other student researchers from both Beaufort and Bluffton campuses.

Students inside and outside the University

Erryn Smith (Biology) travels to exotic veterinary internship in Thailand



Erryn Smith, a rising junior in Biology, spent two weeks in Thailand getting hands-on experience veterinary practices abroad. She traveled with Loop Abroad, a study abroad group that selected Ms. Smith to work on a small team of volunteers serving a dog shelter and, later, spending a week working with rescued elephants at an elephant sanctuary.

The Veterinary Service program organizes trips for student volunteers to Thailand to work alongside U.S. and Thai veterinarians. Ms. Smith and her team spent a week at the Elephant Nature Park, which is home to over 60 elephants in northern Thailand. There, she worked hands-on with the giant rescues and learn about local conservation efforts on their behalf. What a special experience for this outstanding biology major! *Photo credit: Erryn Smith*

Justin Davies (Biology) second intern at Nemours Plantation

Justin Davies served as our second summer intern at Nemours Plantation. After completing a strong field project in our Maymester class, "Life and Death in the Salt Marsh," Justin accepted a summer internship funded by Mr. Colden R. Battey, Jr., a longtime supporter of USCB and local Beaufort County lawyer, through the Nemours Wildlife Foundation. Justin, a senior in our Coastal Ecology and Conservation program, worked as a field technician with three graduate students from Clemson and Marshall Universities in Wildlife/Organismal Biology. He gained hands-on experience with native plant identification; water-quality monitoring; statistical analyses using R; freshwater and brackish macroinvertebrate identification; and assessed the frequency of occurrence of large carnivores using randomly stratified camera trapping. Justin reported that tracking American alligators and diamondback rattlesnakes by radio telemetry was one of his summer's highlights!

This new internship started for the summer of 2018, but followed from the successful internship of **David Barnes** (Biology class of 2017), our first summer intern at Nemours. Nemours Plantation is a former Dupont family plantation situated on the edge of and part of the Ashepoo, Combahee and Edisto (ACE) River Basin, which is listed by The Nature Conservancy as "one of the last great places."



First Alumni Gift to Computational Science program



Left to right: T. Farris, P. Mize, A. Fernandez, M. Fernandez, and C. Salmeron (kneeling)

This spring, the Computational Science Program received its first alumni gift from its graduates working for Fidelity Investments in the Research Triangle area of North Carolina. **Cristian Salmeron** (2015), **Ashley Fernandez** (2017), **Michelle Fernandez** (2017), **Tremaine Farris** (2015), and **Peter Mize** (2017) were able to increase their group gift using Fidelity's employee gift-matching program to increase their first contribution to start a scholarship program for students attending their alma mater. These students are a fine example of the graduates in Computational Science in general. These recent graduates wanted to reach out to help fellow USCB students in the department who launched their successful careers so soon after graduation in just a few short years.

Diana Arencibia (Computational Science) wins national travel award

Diana Arencibia, a senior in Computational Science at USCB, received a scholarship from the Association for Computing Machinery (ACM), the world's largest educational and scientific computing society. The scholarship will fund Diana's attendance at the 2018 ACM Tapia Conference in Orlando, Florida, later this year. Like many technical fields, computing suffers from a lack of diversity. The Tapia Conference brings together computing students, educators, researchers and professionals to acknowledge, promote and celebrate diversity in computing. In addition to research posters, a research competition, and a resume database, the student-centric conference encourages growth through a multitude of technical



and professional development opportunities. Participants are simultaneously given the opportunity to develop relationships with "like me" peers, faculty, researchers and employers. "Like me" relationships are a key factor relationships are a key factor in retaining students from traditionally underrepresented backgrounds.

The Tapia Conference provides participants a resume database for those interested in internships, industry and government employment, graduate programs and faculty positions. Conference sponsors often recruit young talent from this database. The 2018 sponsors include, among others, Caltech, Carnegie Mellon, Cornell, Georgia Tech, MIT Lincoln Laboratory, Rice, Stanford, IBM, Google and the NSF. One of this year's sponsors has already invited Diana to interview for a Ph.D. position based on her submitted Tapia conference resume. *Way to go, Diana!*

Three biology students intern at the Savannah River Ecological Laboratory



USCB students among their fellow interns: Christian Moreno, Kaiya Cain (first and second on left) and Sierra Britt (second from right).

The Savannah River Ecological Laboratory (SREL) has a long history of monitoring the long-term effects of environmental contaminants generated on the site from the 1940s through the 1980s. This year, through an NSF "Research Experiences for Undergraduates" grant, they hosted nine interns from as far away as Hilo, Hawaii, to work in the field collecting data and learning techniques to monitor radionuclides and other environmental contaminants in the flora and fauna present in the cooling reservoirs of the former nuclear facility. The committee selected three of this year's nine interns, **Sierra Britt, Kaiya Cain and Christian Moreno**, from USCB's Biology Program. On July 26th, all nine interns presented their research findings in a day-long Radioecology Summer Research Symposium at the SREL Conference Center in Windsor, S.C. It was a well-attended event with the world-renowned faculty of SREL and visitors alternately grilling and complimenting the young scientists who presented that day.

We are so proud that the high quality of our USCB undergraduates is getting better known, both statewide and nationally.

Tenure and Promotion

DR. SWATI DEBROY, PROMOTION TO ASSOCIATE PROFESSOR OF MATHEMATICS WITH TENURE



Dr. Swati DebRoy

diseases in susceptible populations.

In recent years, Dr. DebRoy and her students have been part of a funded research effort by modeling childhood obesity in the Lowcountry, thereby creating new initiatives to prevent the high obesity rates known especially in the poorer, more rural counties surrounding Beaufort, S.C.

DR. EDWARD D'ANTONIO, PROMOTION TO ASSOCIATE PROFESSOR OF NATURAL SCIENCES WITH TENURE



Dr. Edward D'Antonio

Dr. D'Antonio's research focuses on using x-ray crystallography to see the 3-D structure of enzymes to create new therapeutics for neglected tropical diseases. The main focus of his lab's research has been synthesizing enzyme inhibitors for the blood-born protist, *Trypanosoma cruzi*, which causes Chagas disease. Chagas, which is a new-world parasite cousin of the protist that causes African Sleeping sickness, leads to an enlargement of the heart, among other life threatening symptoms.

Current therapeutics are outdated, ineffective and present intolerable side effects. Dr. D'Antonio has designed and patented several potential new therapeutics to possibly combat the parasite in a more tolerable fashion for the patient.

Faculty recognition and grants awarded

Ji: Carolina Trustee Professorship



Dr. Yiming Ji

Dr. Yiming Ji continues to receive accolades statewide. After his award as a Senior Breakthrough Star last fall, the selection committee named Dr. Ji a Carolina Trustee Professor, one of the highest awards for a USC system professor to achieve. Dr. Ji was the only professor outside of USC Columbia to earn this year's award a second time. The first was the Breakthrough Star award last fall. We are honored and privileged to work with this talented, dedicated and caring professor at USCB. Dr. Ji's efforts will culminate next fall in the inaugural open-

ing of the graduate program in Computational Science at USCB, the first graduate program offered directly through the USCB faculty. Congratulations, Dr. Ji!

D'Antonio: Outstanding Undergraduate Research Advisor

The USC-system Undergraduate Research Office recognized **Dr. Edward D'Antonio** as one of three Distinguished Undergraduate Research Mentors for 2018, statewide. This was quite an honor for Dr. D'Antonio. While it did not equate to earning tenure and his promotion to Associate Professor, it is this level of dedication in creating the next generation of researcher/scholars that led to his recognition—and his ultimate tenure and promotion. Congratulations, Professor Edward D'Antonio!

ASPIRE Award winners

ASPIRE (Advanced SuPport for Innovative Research Excellence) grants are USC systemwide, competitive grants for preliminary research or to develop needed research infrastructure. The following school faculty were successful in their applications this spring:

Dr. Eric Montie, "Building USCB Infrastructure for Marine Soundscape and Noise Pollution Research and Other Coastal Ecology and Conservation Programs"

Drs. Kim Ritchie and Jena Chojnowski, "Acquisition of a Real-Time PCR machine for Natural Sciences and Biomedical Research Development"

Dr. Xiaomei Zhang, "PeerCould: Enhancing Mobile Edge/Cloud Computing with Device-to-Device Offloading"

Recent publications from the SCHOOL OF SCIENCE AND MATHEMATICS:

Canada, BA. G.E. Brings Good Things to Life: Using Video Game Development to Transform Student Perceptions of the General Education Curriculum, 2017 South Carolina Conference on Innovations in Teaching and Learning (SCCITL), Medical University of South Carolina, Charleston, SC, July 2017. [Selected for oral presentation]

D'Antonio, EL. United States Patent No. 9,956,240: Therapeutic mono-saccharide-based inhibitors of hexokinase and glucokinase for parasitic diseases, along with methods of their formulation and use. May 1, 2018

Hall ER, Muller EM, Goulet T, Bellworthy J, **Ritchie KB**, Fine M. (2018) Eutrophication may compromise the resilience of the Red Sea coral Stylophora pistillata to global change. *Marine pollution bulletin*. 131:701-11.

Sevim, V. (2017). Co-evolution of problem posing and problem solving after finding a way in. *Constructivist Foundations*, 13(1): 173-175

Smott S, **Monczak A**, Miller ME, **Montie EW**. (2018) Boat noise in an estuarine soundscape—A potential risk on the acoustic communication and reproduction of soniferous fish in the May River, South Carolina. *Marine Pollution Bulletin*. 133:246-60.

Staton JL, Canada BA, Borgianini SA, Barkel KM. Colonization of coastal and estuarine environments, in G. Poole & M. Thiel (Eds.), *The Natural History of Crustacea*, Volume VIII, Ch. 10. New York: Oxford University Press, 2018. [under final revision/review]

Thomas, N, **Erdei, R.** Stemming Stereotype Threat: Recruitment, Retention, and Degree Attainment in STEM Fields for Undergraduates from Underrepresented Backgrounds. To be presented at, and included in Proceedings of, the Collaborative Network for Engineering and Computing Diversity (CoNECD) 2018 Conference, Crystal City, VA, April 2018.

Zhang, Xiaomei, Cao G. "Transient Community Detection and Its Application to Data Forwarding in Delay Tolerant Networks," *IEEE/ACM Transactions on Networking*, 25.5 (2017): 2829-2843.

Zhang, Xiaomei, Wu Y, Huang L, Heng Ji H, Cao G. "Expertise-Aware Truth Analysis and Task Allocation in Mobile Crowdsourcing," In Proceedings of the 37th IEEE International Conference on Distributed Computing (ICDCS), pp. 922-932, 2017.

(**bold** indicates USCB author)